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Central Intelligence Agency

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DOC NO GI M 86-20195

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Washington, D.C. 20505

DIRECTORATE OF INTELLIGENCE

4 SEP 1986

MEMORANDUM FOR: See Distribution List

FROM: [redacted] 25X1
Director of Global Issues

SUBJECT: Coca Cultivation in South America: Assessing the Magnitude of the Problem [redacted] 25X1

1. The attached memorandum explains our imagery-based methodology for estimating coca production in South America and discusses progress on gauging the size of the crop. In addition to assessing the magnitude of the problem, such estimates help monitor drug control efforts and support reporting requirements of the 1984 Hawkins-Gilman Amendment to the Foreign Assistance Act. Our findings show that coca production is increasing, and we estimate that in 1985 cultivation ranged between 140,000 and 200,000 hectares--easily enough to supply the expanding world market for coca products. [redacted] 25X1

2. This memorandum was prepared by [redacted] 25X1
[redacted] the Strategic Narcotics Division, Office of Global 25X1
Issues. [redacted] 25X1

3. Questions and comments are welcome and may be addressed to the Chief, Strategic Narcotics Division, OGI [redacted] 25X1
[redacted] 25X1

[redacted] 25X1

Attachment:
Coca Cultivation in South America: Assessing the Magnitude of the Problem [redacted] GI M 86-20195, 25X1
August 1986, [redacted] 25X1

[redacted] 25X1

[redacted] 25X1

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SUBJECT: Coca Cultivation in South America: Assessing the Magnitude of the Problem [redacted] 25X1

OGI/SND/W [redacted] (29 August 1986) 25X1

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SUBJECT: Coca Cultivation in South America: Assessing the Magnitude of the Problem [redacted] 25X1

OGI/SND/W[redacted] (29 August 1986) 25X1

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SUBJECT: Coca Cultivation in South America: Assessing the Magnitude of the Problem [redacted] 25X1

OGI/SND/W, [redacted] (29 August 1986) 25X1

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Central Intelligence Agency

Washington, D.C. 20505

DIRECTORATE OF INTELLIGENCE

15 August 1986

Coca Cultivation in South America: Assessing the Magnitude of the Problem

Summary

In 1984, we began to expand our use of imagery-based estimative techniques to give policymakers and drug enforcement specialists a more precise understanding of the extent of coca production in South America. Thus far, cloud cover has hampered imagery collection and restricted comprehensive analysis largely to Bolivia--one of six countries on the continent engaged in coca production. Nevertheless, results have demonstrated our ability to adapt the imagery-based estimative procedure used successfully for opium poppy, marijuana and licit crops to identify coca cultivation. Moreover, our analysis confirms that despite stepped up eradication and interdiction efforts by several governments in the region, coca cultivation is increasing. [redacted] 25X1 25X1

We estimate that coca cultivation in South America in 1985 was between 140,000 and 200,000 hectares, easily enough to supply the expanding world market for coca products. Nearly all is grown in Bolivia, Peru, and Colombia, although there is limited coca cultivation in Brazil, Ecuador, and possibly Venezuela. We collected enough data to apply our methodology to all agricultural regions of Bolivia, and we estimate the country now has some 30,000 to 38,000 hectares in coca cultivation. Our estimate for Colombia--13,000 to 15,000 hectares--is preliminary because it is based on a limited amount of good quality imagery obtained in 1984 and 1985; we should be able to refine the estimate by the end of this year. [redacted] 25X1 25X1

[redacted] **Peruvian coca cultivation may be anywhere from 100,000 to 200,000 hectares, and we intend to concentrate analysis on Peru in 1986 to obtain an accurate estimate by the end of the year.** [redacted] 25X1 25X1

Virtually all governments of these principal coca producing countries, albeit with varying degrees of commitment, either initiated or expanded coca eradication programs in 1985. To

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date, these programs have not stemmed the increasing rate of cultivation--though some show promise for the future. Bolivia embarked on a narcotics control program last November that calls for both voluntary and forced coca eradication and currently is following-up this effort with a US military supported operation, Blast Furnace, to destroy drug-processing centers throughout the country. Peruvian counternarcotics teams manually eradicated approximately 4,800 hectares of coca in the Huallaga Valley, perhaps Peru's most important illicit coca growing area. The Colombian National Police estimate they eradicated some 2,000 hectares of coca, and Colombian authorities have identified a herbicide that can be applied aerially and manually to the hardy coca bush.

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This paper was prepared by

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of the Office of Global Issues, Strategic Narcotics/Western Hemisphere Branch; and by

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the Office of Information Resources. It was coordinated with the Directorate of Operations. Comments and queries are welcome and should be addressed to the Chief, Strategic Narcotics Division, OGI, on

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Cocaine: Stopping The Flow At The Source

Cocaine hydrochloride has become one of the most widely available and potentially lethal illicit drugs on the US market. In 1984, according to The Drug Enforcement Administration (DEA), there were at least 617 cocaine-related deaths in the United States, one-third of them homicides. Since the early 1970's, cocaine production and trafficking have risen rapidly and the street price has decreased accordingly. Cocaine trafficking has increased in Western Europe as well as the Americas, causing governments in both regions to look for ways to stop the flow.

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Virtually all the cocaine entering the United States comes from coca leaf grown in South America--principally in Bolivia, Peru, and Colombia, although Ecuador and Brazil also produce small amounts. After preliminary processing near cultivation sites, traffickers send coca base or paste to laboratories for processing into cocaine. DEA estimates that about 75 percent of the cocaine trafficked in the United States is refined in Colombia, whose major criminal families monopolize the cocaine trade worldwide. So profitable is this trade, however, that neighboring countries in South America are getting into the act.

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Toward An Effective Control Strategy

Drug control experts in the United States generally agree that the most effective way to limit the flow of cocaine from South America is to target cultivation and preliminary processing within source countries, preferably before raw or semi-refined coca reaches laboratories and transnational distributors. Bolivia, Peru, and Colombia are at a disadvantage in prosecuting such a war. Not only is coca a traditional and culturally accepted crop in these countries, but their regimes are hamstrung by international debt, political corruption, suspicion of US motives, active insurgencies, and lack of expertise and resources to tackle the drug problem. The United States has pushed for strong bilateral drug control programs with each of these countries, offering expert counsel, training, and equipment in return for positive steps to control drug production and distribution. The 1984 Hawkins-Gilman Amendment to the Foreign

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Assistance Act provides the stick: if a country does not make satisfactory progress in curtailing its drug business, the US Congress can withhold economic and military assistance. 25X1

A cornerstone of the US narcotics control program abroad is the reduction of the amount of land under coca cultivation through crop eradication. Eradication has a number of advantages especially if it is done with aerially applied herbicides:

- It is cheap in terms of manpower, equipment, time, and supplies.
- Eradicated fields will yield no coca for several years, and eradication is subject to aerial verification.
- It is less likely to be limited by corruption, bureacratic ineptitude, or weak criminal statutes.
- It minimizes the risk of violent clashes with growers, traffickers, or guerrillas. 25X1

For coca eradication to work, both the United States and the source country must know with some precision where and how the leaf is grown, in what quantities, and by whom. The value of such information goes beyond supporting crop eradication; it is also essential to estimating the potential amount of cocaine that traffickers have available to smuggle into the United States and to targeting primary growing, processing, and distribution networks. Moreover, this information provides the United States with a concrete indicator--one that can be brought to the bargaining table--of a country's success or failure in moving against the drug trade. 25X1

Developing A New Estimate of Cocaine Production

In late 1984, we concluded--after consultation with the Department of State and the DEA--that a more precise understanding of the location and extent of coca cultivation is essential to determine how much cocaine was being manufactured and to provide base line information necessary to develop more effective eradication programs. A major concern of the Intelligence Community and of the State Department was that previous US Government coca production estimates were too imprecise to use for foreign aid decisions. To increase the accuracy of our coca estimates, we chose to apply the same imagery-based estimating technique that we have used successfully to estimate opium production in Asia. Our coca estimates also draw heavily on methodology developed to estimate licit crop production in countries like the USSR.

Estimating Procedure. Coca bushes are usually planted in neat rows with plants spaced about one meter apart. This 25X1

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planting scheme [redacted] means that coca crops are easily identified--and there are few other crops in South America that can be confused with coca on overhead imagery. Because it is a perennial with a life cycle of up to 20 years, estimates of total coca cultivation will be reliable for several years unless the crops are deliberately destroyed. [redacted]

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Imagery is essential for identifying fields and determining hectarage of the areas cultivated. Yield data [redacted] can be adjusted to reflect actual growing conditions. We used imagery of all kinds--satellite and aircraft--first to identify suspect coca-growing regions, next to count the number of cultivated coca fields, and finally to obtain the average size of those fields. Because it is seldom possible to image an entire growing region, we use accepted techniques of parametric statistics to select our sample and generalize to the full field population. The number of fields observed in a given sample area is assumed to be representative of the entire growing region, and the density of fields per square kilometer in the area sampled is scaled up to reflect the extent of cultivation throughout the area planted. [redacted]

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Imaging Systems. A variety of overhead collection systems have contributed uniquely to our latest estimate:

- Landsat Imagery. Imagery taken since 1983 by the unclassified multispectral LANDSAT satellite was procured for most of the potential coca growing regions of South America. Because coca typically is grown in remote locations where maps are poor or non-existent, we relied on LANDSAT data to delineate agricultural from non-agricultural areas--the first phase in sorting out likely coca growing areas from forests, mountains, and other uncultivated areas. Agricultural areas--ranging from large newly colonized developments such as those in the Chapare region of Bolivia and the Huallaga Valley in Peru to clusters of scattered fields along lowland rivers--were identified as suspect coca-growing regions. We then plotted survey lines for higher resolution satellite and aircraft imagery.

- U-2 Photography. The accuracy of our coca estimate was enhanced greatly by a series of U-2 reconnaissance flights in late August and early September 1985. Good quality, cloud-free photography was obtained over all of Bolivia's known coca-growing areas; the imagery obtained over Colombia was mostly cloud-covered. The U-2 provides maximum collection efficiency by photographing large tracts of land in a minimum of time, allowing us to assess the extent of coca cultivation over wide areas. These overflights represent the first use of a high altitude national reconnaissance aircraft against coca cultivation.

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- Aerial Survey Imagery. Aerial photographic surveys provided the second phase identification necessary after major coca growing areas had been identified on U-2 and satellite systems. Because these surveys are usually flown with large scale color or color infrared film, they are expensive and cannot be used efficiently to analyze large areas. They provide excellent detail that can be used in conjunction with high altitude photography to develop photo interpretation signatures that allow us to identify coca on classified systems more confidently. Peru has the most active aerial program to map and identify coca fields: the Peruvian Navy flew a mission over the eastern portion of the Huallaga Valley in 1984 using color infrared film, and an additional large scale color survey was flown over the western side of the valley in 1985.

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Country-By-Country Production Profiles

We estimate there are 140,000-200,000 hectares of coca under cultivation in South America and coca production to be a minimum of 140,000 metric tons a year, enough coca to supply the international market with nearly 200 metric tons of cocaine hydrochloride. In most countries, US-sponsored eradication efforts have yet to make an impact on this large quantity of coca, most of which is grown illegally. In Peru and Bolivia, where eradication teams are operating, resistance by peasant growers to eradication teams is increasing.

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Bolivia. Bolivia is one of the two dominant sources of coca in South America. We estimate that Bolivia has some 30,000 to 38,000 hectares planted in coca. Our best point estimate of cultivation is 34,250 hectares, with an associated cocaine hydrochloride capacity of some 80 metric tons.

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In the Chapare and the Yungas regions, which account for more than 90 percent of Bolivia's coca cultivation, there was sufficient U-2 photography and satellite imagery to calculate two independent estimates--one derived from each system. These assessments were in close agreement, and we combined the two, using appropriate statistical methods, to obtain what we believe is an accurate assessment of the amount of coca under cultivation.

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Our survey results confirm that the Chapare region is Bolivia's largest coca producer, with an estimated 26,000 hectares or nearly 75 percent of the country's total coca cultivation. We found coca fields intermixed with fruit and grain crops throughout the region. Fields in the Chapare averaged .36 hectares--the largest in the country. We also noted land clearing in the Chapare, probably for future coca cultivation.

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Coca cultivation is disrupting the traditional agricultural economy of the Yungas region in La Paz Department. According to our estimate, only 5 percent of the land under cultivation is planted to crops other than coca.

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local inhabitants of the Yungas--mostly Quechua Indians--have switched from traditional crops to coca. The Yungas was a major fruit and citrus supplier for Bolivia, but few orange groves and banana trees remain. Extensive slash-and-burn activity was observed on imagery and by a ground survey team that traveled to the Yungas in October 1985. Large numbers of seedling nurseries and newly terraced and recently planted coca fields were found throughout the region--another indication that coca production will increase.

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Prior to the September 1985 U-2 survey, the Apolo coca growing region has never been observed on good quality imagery, and the size of its coca area was unknown. The U-2 mission provided complete coverage of Apolo, and we estimate 650 hectares of coca are under cultivation. As in the Yungas, we saw coca fields in all stages of cultivation throughout the area. But unlike the domination of coca in the Yungas, legitimate grain crops and fruit trees were evident in much of the Apolo agricultural basin. Slash-and-burn activity also was apparent throughout the region, and coca is likely to be planted on some of this newly-cleared land. In addition, we observed coca cultivation in the Rio Alto Beni, Rio Mapiri, Rio Boopi and Rio Yapacani river valleys that we estimate to be 1,400 hectares.

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The decline of traditional mining and petroleum refining industries in Bolivia over the past two years has fueled an increase in coca cultivation and the growth of the narcotics industry. According to US Embassy reporting, unemployed workers from industrial regions are migrating to coca-growing areas in search of steady wages. Farmers in many agricultural regions also are turning to narcotics production to supplement their subsistence incomes from licit crops. Businessmen in Cochabamba--a major department capital near the large Chapare coca-growing region--recently told the US Embassy that as much as 70 percent of the workforce in their area is involved directly or indirectly in the narcotics industry.

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Under US pressure to begin crop eradication--and fearing that narcotics trafficking and domestic drug abuse are

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increasing--Bolivia hastily designed but cautiously embarked on a new narcotics control program last November. The program calls for voluntary and forced crop reduction in the Chapare region, intensified interdiction, and a drug awareness campaign. Voluntary destruction of plants will be in accord with a November agreement between the government and leaders of major Chapare coca farmer federations. Under the agreement, LaPaz dispatched survey teams to the Chapare to measure cultivation as well as oversee and verify voluntary destruction of coca. The government will allow farmers to cultivate up to two hectares of coca and will pay them $350 for each hectare of excess cultivation they destroy. The government also sent antinarcotics police to carry out interdiction operations and implement forced eradication in areas where farmers had not agreed to voluntary eradication. Using these techniques, Bolivian officials hope to meet the US-recommended target for eradication of some 4,000 hectares in 1986.

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Bolivia's eradication program has been ineffective, a victim of insufficient resources and corruption among police officials conducting interdiction operations. According to the US Embassy, farmers had voluntarily destroyed only 25 hectares of coca by the end of January 1986, and there is no evidence that forced eradication actually occurred. By mid-March, some 500 hectares had been tagged for voluntary eradication. The US Embassy reports that the field survey program is expensive and lacks enough funding to carry out government plans. Police antinarcotics units also have been short of the supplies necessary to sustain operations in isolated growing areas.

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Resistance from Chapare coca farmers--both passive and violent--also has prevented government officials from pushing ahead toward the goals of the control program. Antinarcotics police deployed to areas of the Chapare where farmers did not agree to reduction of coca crops were met by angry crowds opposing the program. Initially, troops carried out only interdiction operations to avoid direct confrontation with growers who depend on coca cultivation for their income. By January, extensive peasant opposition to the presence of the troops prompted La Paz to order a sharp reduction in interdiction operations. In areas where farmers agreed to voluntary reduction, land survey teams have been met by passive resistance from coca farmers. Before fields can be measured, extensive negotiation often is required with farmers since they individually must allow their fields to be surveyed. Peasant federations initially directed survey teams to small plots hoping that the program would soon lose momentum if few fields of excess cultivation were identified. At the same time, farmers have been dividing their coca fields among family members or selling off parcels to assure that individuals do not own more than the lawful two hectares.

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La Paz's failure to distinguish between traditional and non-traditional coca-growing areas could become a major obstacle to the government's efforts to destroy excessive coca cultivation. The National Narcotics Decree Law of May 1985 limits coca cultivation to the Yungas and Chapare regions. It also mandates that the government determine which coca farms within each region are traditional and legal and which are non-traditional and illegal. Coca farms in the non-traditional areas will be eradicated, according to the decree. Although the law required officials to determine traditional and non-traditional areas by September 1985, no distinction has been made, and we believe La Paz is avoiding the issue to prevent further agitation among farmers. Whether or not La Paz confronts this problem will be a key indicator of the emphasis it intends to give narcotics control. As it stands now, few fields can be destroyed since most are below the two-hectare limit to which the government and the farmer organizations have agreed.

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Despite the problems with eradication, President Paz continues to look for ways to disrupt the cocaine trade that eventually will lead to less coca cultivation. In July, the Government of Bolivia, with logistical assistance from the United States military, launched Operation Blast Furnace, the largest effort to date to locate and destroy refining centers in northern Bolivia where much of the Chapare and Yungas coca is converted into coca base and cocaine. Although the operation could not be kept secret from the traffickers, it has caused many of them to abandon their laboratories, cease operations, and drop out of sight to avoid arrest. The US Embassy predicts that if pressure can be sustained on the trafficking and processing infrastructure, the demand for Bolivian coca will drop. The resulting fall in prices and trafficker support to growers should improve the government's chances of moving ahead with a more comprehensive eradication effort.

Peru. Peru is an even larger coca grower than Bolivia--although we have not yet been able to execute the kind of survey that would permit us to narrow the range of estimates for total hectarage. A comprehensive imagery-based estimate of Peruvian coca cultivation was impossible in 1985 because clouds over much of the growing area blocked efforts and no U-2 flights were attempted.

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Nevertheless, we are mapping suspected coca-growing areas with Landsat imagery to help us evaluate Peruvian coca cultivation in 1986. We have good Landsat coverage of Peru's upper Huallaga River Valley, and Landsat mapping also is underway for other important growing areas such as Cuzco Department, the Apurimac and Maranon River Valleys. Low altitude aerial surveys flown by the Peruvian Navy over the Huallaga Valley in 1984 and 1985 provide a level of detail and should enhance efforts to analyze coca cultivation in 1986. We already can tell that clearing for coca cultivation is proceeding rapidly in the Huallaga Valley. Some of the fields are unusually large, perhaps four or five hectares.

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We believe coca cultivation in Peru is between 100,000 and 200,000 hectares. This is not an imagery-derived estimate; it is based on our judgement that the various estimates reported in the past few years likely have bracketed the actual number of hectares cultivated. According to information provided by the US Embassy in Lima, a former Interior Minister estimated in 1983 that there were 60,000 hectares of coca in Peru. 25X1 25X1 In 1984 the Guardia Civil--one of whose units is tasked with Peruvian drug enforcement--estimated 130,000 hectares of coca nationwide 25X1 25X1 In 1985, the president of the National Coca Enterprise (ENACO), which is the legal monopoly for buying coca leaf in Peru, estimated there was as much as 200,000 hectares under cultivation, and the US Embassy estimated there were 100,000 hectares. According to the International Narcotics Control Strategy Report for 1985, only 40,000 hectares of coca land in Peru is registered and used for legal production. 25X1

Coca is grown in nearly every department. 25X1 25X1

we identified significant quantities of coca on 25X1 imagery of western Pasco Department near the power plant at Yaupi. Extensive coca cultivation also was observed for the first time on imagery 80 nautical miles north of Tingo Maria. 25X1 25X1

Since coming to office in late July 1985, the civilian government of Alan Garcia has declared war on narcotics traffickers. In support of this aggressive antinarcotics posture, the Peruvian Government signed an agreement with the United States to eradicate at least 6,000 hectares of coca per year through 1989. In 1985, Peru's coca eradication campaign gained momentum despite persistent threats and attacks against eradication personnel by traffickers, coca growers, and insurgents. In November, Peruvian military assets were used for the first time to support coca eradication efforts. Air Force helicopters conducted aerial reconnaissance of future eradication sites and assisted the Guardia Civil in interdiction operations in the Upper Huallaga Valley. Also in November, the Peruvian government temporarily doubled its coca eradication workforce to 2,000 personnel in preparation for an end-of-year push into additional growing areas, but resistance from the local population caused the operation to be canceled. Still, Peruvian eradication teams eliminated over 4,800 hectares of coca in 1985 compared to some 3,200 destroyed in 1984, according to the US Embassy. 25X1

Peruvian authorities would like to expand operations in 1986 by forming a second eradication unit, but serious resource and

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security obstacles are likely to impede their progress, according to US Embassy sources. Manual eradication is cumbersome. It takes 30 laborers one day to destroy a hectare of coca, according to US Embassy observations, and the expenses of paying, housing, feeding and protecting another large eradication team are probably too great for Peru's austerity-minded government. Moreover, as eradication progresses into trafficker-controlled territory, violent confrontations with drug producers become greater. Several eradication workers have been killed by drug traffickers, and each attack has made it more difficult to recruit workers and caused operations to be suspended or relocated. Finally, terrorists and insurgents--notably the Sindero Luminoso--continue to operate in drug producing areas. Another upsurge in their activity, as in 1985, could cause the military to suspend antinarcotics operations if it is again ordered to take control of civil police functions. During the 1985 State of Emergency, for example, eradication operations in the Upper Huallaga Valley were stopped several times by military commanders who argued that the problem of terrorism was more compelling.

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Colombia. Our survey confirmed that the pattern of coca cultivation in Colombia has changed substantially over the past seven years. Prior to 1979 most Colombian coca was grown in the Andean foothills of southwestern Colombia in the Departments of Cauca and Narino. Since then cultivation has expanded rapidly into the heavily forested southeast, and we estimate--based on a preliminary survey that Colombian growers currently are cultivating 13,000 to 15,000 hectares of coca. Most is grown on plots recently carved out of the jungle in Caqueta, Vaupes, Putumayo, Amazonas and Guaviare Departments. Reasons for this major shift in cultivation are unclear, but pressure by Colombian security forces operating in Cauca and Narino Departments likely forced traffickers and growers to seek areas where Colombian security forces had less control. We suspect the shift may have resulted from, among other things, a decision by the Colombian drug mafia to produce its own coca in an effort to reduce its dependence on supplies of coca paste and base from Peru and Bolivia.

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Although mostly cloud-covered, recent U-2 photography did reveal that Colombian coca growers are clearing land in the southeast. The low alkaloid content of Colombian coca leaves compared with those produced in Bolivia or Peru means that much more coca has to be harvested in Colombia to obtain an equivalent amount of cocaine. Colombian authorities believe that nearly all Colombian coca is used to produce basuco, a cigarette made from coca paste and tobacco that is consumed largely within Colombia.

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The Colombian Government is determined to accelerate coca eradication and has vowed to shift from its labor intensive manual eradication program to a more efficient and secure program based on herbicidal application. The Government has begun an

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intensive herbicide testing program and has established a test site near San Jose Del Guaviare in southeastern Colombia. Formal testing began in March 1985, and four herbicides were identified that may be effective against the hardy coca bush. In May, the National Council of Dangerous Drugs directed the National Police to expand testing, including aerial spraying of 50 hectares. To avoid trees near coca fields, herbicides were sprayed from high altitudes making them less effective. Nevertheless, in December the National Police proposed to expand the aerial application tests to cover 1,000 hectares. Adjustmenting equipment and spray mix will likely solve these technical problems, and the Colombian police are eager to expand the aerial spray program beyond the approved 1,000 hectare tract. At the same time the aerial application is underway, a back-pack spraying operation is to begin in southeastern Colombia.

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In our view, a stepped up aerial eradication campaign against coca could have immediate benefits to Colombian society. First, successful aerial eradication would send a message to subversive groups who rely on coca taxes to fund their insurgent operations that this relatively secure source of funding may soon be eliminated. Second, it may slow the devastation of Colombian forests by subsistence farmers determined to get rich growing coca. And last, it would almost immediately put a dent in the manufacture of basuco which is of great concern to the Colombian public and Colombian leaders.

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Ecuador, Venezuela, and Brazil. In 1985, neither good quality U-2 photography were available over Ecuador or Venezuela. Consequently, we have no imagery-derived estimate of these areas though coca is known to grow there. The US Embassy in Quito, Ecuador, estimates that 2,000-3,000 hectares of coca are under cultivation in the country, mostly along the Ecuador-Colombia border.

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Ecuadorean coca is a different variety than that grown in Colombia, Peru, and Bolivia. the average height of coca plants in Ecuador ranges from six to eight feet and some plants are as tall as 12 feet. State and DEA believe that most coca plantations are owned and operated by Colombians who move freely across the border. As is the case in Bolivia and Peru, the bulk of Ecuador's coca leaf is converted to coca paste before it is transported to Colombia and refined into cocaine.

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President Febres Cordero has focused the country's limited drug control resources on coca eradication. In July 1985, Ecuador initiated the first international coca eradication operation in the Western Hemisphere. Jointly with Colombian National Police, over 190 hectares of coca were eradicated and 39 paste labs were destroyed. This brought the official coca eradication total for 1985 to 464 hectares. The successful Ecuador-Colombia experience led to a subsequent joint operation between Colombia and Peru. Ecuador and Colombia are planning a second joint operation for the near future.

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Venezuela serves as a transshipment area for cocaine, but we have no evidence that it is a major producer of coca leaf. According to DEA reports, limited coca cultivation occurs in the Perija mountains near Venezuela's northwestern border with Colombia. Poor weather conditions, however, precluded confirmation of these fields 25X1

confirmed coca cultivation 25X1
along small tributaries feeding into the Amazon river in Brazil's Amazonas State, but we lacked to provide a 25X1
thorough crop assessment for the country as a whole. 25X1
coca grown in the upper Amazon 25X1
Basin is often planted under trees, with individual plants reaching a height of 10-15 feet. This suggests that the same large variety grown in Ecuador may also be grown in Brazil. The coca fields we identified, however, were planted in the open. 25X1
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The Trafficking Connection

A handful of Colombians head most of the far-reaching, international trafficking networks. Operating under the guise of leading businessmen, politicians, and social benefactors, they are responsible not only for exporting tons of cocaine but also for its distribution through several layers of the marketing chain. Their shipments are often as large as a ton, worth tens of millions of dollars wholesale, and are smuggled in private boats and airplanes or disguised as legitimate cargo and in commercial carriers. Although well known to authorities, Colombian traffickers have remained immune from prosecution, protecting their operations through the skillful use of bribery, intimidation--to the point of murdering key law enforcement and public officials--and manipulation of public attitudes. 25X1

Some Bolivians and Peruvians also head cocaine manufacturing and smuggling networks. Although we believe ruthless competition from the Colombians has limited their success in penetrating the US market, trafficking opportunities are improving. Bogota's increasingly hard line against cocaine has driven some of Colombia's traffickers into Peru and Bolivia. This has encouraged new alliances between Colombian, Peruvian and Bolivian traffickers leading to an increase in cocaine production and smuggling from these countries. An even better opportunity, however, lies in exploiting new markets in Europe. Traffickers from many South American countries realize if they gain an entree into the wide open and rapidly expanding European trade, they stand a good chance of developing lasting customers and even more extensive distribution chains. Meanwhile, Colombian, Peruvian, and Bolivian traffickers are fostering increased domestic drug use by introducing various low-cost coca products and cocaine to urban and rural populations outside traditional growing areas. These developments will contribute to increased coca production and refining even as Bogota, Lima, and La Paz intensify their drug control efforts. 25X1

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The new governments in Bolivia and Peru have joined with Colombia in announcing a harder line on the drug trade. This has resulted largely from steady US pressure, growing domestic drug abuse, and the realization that powerful trafficking networks pose a serious threat to political, social, and economic institutions in these countries. Drug control efforts are still underfunded, and Government efforts to increase eradication often are resisted strongly by peasant cultivators. Other less direct measures such as crop substitution, judicial action, control of essential chemicals, rural development, and public awareness campaigns have shown some success in individual countries, but lack of international cooperation allows growers and traffickers to relocate operations into any country where enforcement is lax.

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A Final Note

Our effort to establish the size and extent of coca cultivation in South America is continuing. Acquisition of imagery is increasing. We acquired excellent U-2 photography over most of Colombia's coca growing area in January 1986, this should allow us to assess more accurately the extent of coca cultivation in Colombia. We have requested U-2 coverage of Peru and along the Colombia-Ecuador border to identify suspect coca growing areas in these regions. Finally, we have obtained film from an aerial survey of the Huallaga Valley, conducted in 1985 by the Peruvian Navy that will be used to improve our sample of coca cultivation in this important illicit coca growing region.

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Table 3

Coca Production in Bolivia, 1985

Region	Type of Field[1]	Estimated Area Under Cultivation ha	Yield[2,3] kg/ha	Estimated Production[4] mt
Chapare	mono	23,720	2,551	60,510
	mixed	2,060	2,041	4,204
	total	-	-	64,714
Yungas	mono	6,355	1,814	11,528
	mixed	108	1,451	157
	total	-	-	11,685
Alto Beni	mono	1,222	1,814	2,217
	mixed	17	1,451	25
	total	-	-	2,242
Beni	-	14	1,500	21
Apolo	-	633	1,687	1,068
Yapacani	-	121	1,500	181
National Total	-	34,250	-	79,911

Notes:

1 Fields were classified as either all coca (mono) or coca intercropped with citrus trees (mixed). Yields in mixed fields are assumed to be 20 percent lower than for fields that are entirely coca.

2 Yields are based on collateral data from DEA reporting and ASG, Coca and Cocaine: Research/Analytical Aid, [redacted] 25X1

3 Yields are expressed in kilograms of wet coca leaf per hectare. To convert to metric tons per hectare, divide by 1,000. Thus, for example, a yield of 2,551 kg/ha corresponds to 2.551 mt/ha.

4 [redacted] 25X1

[redacted] it is not possible to assign a regorous uncertainty to the final production estimate. 25X1

[redacted] 25X1

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Table 4

Cocaine Production in Bolivia, 1985

Stage of Processing[1]	Quantity (metric tons)
Harvested wet coca leaf	80,000
Dry leaf[2]	32,000
Less domestic consumption[3]	18,250
Net leaf produced	13,750
Conversion to coca pasta[4]	218
Conversion to coca base[5]	84
Conversion to Cacaine HCl	84

Notes:

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[redacted]

2 Weight decreases by 60 percent in the drying process.

3 Domestic consumption is based on 50 grams per day for one million users.

4 Based on a 63 to 1 conversion ratio of leaf to paste, assuming a 70 percent efficiency in the manufacture of cocaine paste.

5 Based on a 2.6 to 1 conversion ratio, using a 70 percent efficiency in the conversion of paste to base.

[redacted]

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